

III-1937

RECORD

Mar. 5

3 1/2 oz
6 oz

April 13 little turtle
larger

3 3/4 oz
~~5 6~~

June 20-21

2 1/2 oz
4 3/4 oz

June 12 Photo
larger 138.5 gr.
smaller 131.

6 1/2 - 7
() oz
(4 3/4 - 5)

Oct. 9 Photo
larger.
smaller.

10 oz
7 1/2

April 15-1936 younger = 5 3/4 inch. 23 1/4 oz
older = 5 5/8 inch. 22 oz.

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heavily wetted sea urchin

Subsidence cap.

Got unpacked.

Voyage of Velero III leaving S.C. 1
Dec. 3, 1933

Dec 30 The steel cruiser Velero III Capt. G. Allan Hancock left the dock at Terminal Island, Los Angeles Harbor at 11.05 a.m. In a heading to Guayaquil via the Revillagigedo Is. the Galapagos to return via Panama along the main coast. Most of the time today spent in the Eufed were for S.A. a near as but there were four excursions from points outside of Calif. Mr. W. S. S. T. Curciologist Mr. W. B. Taylor. U. M. algologist R. H. G. Mante ^{U. M.} specialist in hematology & H. C. W. S. Thomsen. U. B. C. in Hydroids

The air. T. 59° F W. T. 58°
In Catalina Channel the sea was somewhat choppy and the weather was dull with rain & squalls. The Galapagos Is. could be seen but dimly when they could be seen at all.

Cronado Id. was ahead at 6.52 ^{P.M.}
Dec. 31 The tent is slowly rising the air was 60° F at 4 a.m. rising to 75° at 4 p.m. but down to 62° ^{at night} at midnight W. T. 61-64° Animal life scarce. San Benito & Cedros Id. came in sight at 3.14 p.m. and were above about 4 p.m. A couple of mize reels in the evening followed by mize 2 Velero 2 mize. This was repeated regularly each evening unless prevented

S.A. as of most floods & history

and up to the did not all further go both.
The weather was cloudy most of the day but
cleared a little at times, sea smooth.

Jan. 1. A.T. 63° in the morning, reached a high of 89
at 4 p.m. and back to 69 later. W.T. grad
increased from $64-72^{\circ}$. The weather cleared
the most of the day with a following sea.

Rene Langman and Stan - Col. for fall
game was the radio. - (the radio set is
evidently very efficient and the operator is well
judging for the contact with the rest of the
world maintained at all times.

Saw the first flying fish of the trip
and the first gannet.

Jan. 2. A.T. 67° at 4 a.m. 70° at 8 a.m. not later
in rest of day. W.T. $74-77^{\circ}$.

Morning lighter with following sea. Anchored
in Brantley Bay on the south coast of
Socorro I. the easternmost Id of the Reil-
yde group at 3.59 p.m. 99.3 miles
from S.A. approaching the id. from the N.

— rock is rather conspicuous. The
west side of this Id. is more precipitous especially
near shore. Lat. Socorro $20^{\circ}35'N$ $106^{\circ}37'W$.
Mt. Everest 3707 feet high in the single
large volcanic cone but there are several
smaller (some quite small) on its flanks.
The whole id. is volcanic & the general
appearance due to the exposed lava & lack
of green vegetation is anything but inviting.

Large sand boulders.
 These got about a ducking & nearly got
 fish wet but bristled & protested
 it against the very temporary immersion

It is not particularly difficult to walk on the
 lawn but it is to be done carefully & slowly.
 The ash cone to the westward of Brattvaig Bay
 is quite a characteristic feature of the island
 near the shore here there is not much cactus
 but the bush is difficult to pass through
 where it is thick.

The birds that had been very scarce on
 the way southward were plentiful again & soon.
 The large frigate birds being perhaps the
 most conspicuous. In Brattvaig Bay the fish
 are abundant and varied. Here & every-
 where in shallow water sharks are abundant
 mantas are present but not so numerous
 as in other localities later visited. In the
 pools and off the rocks near the shore fish were
 very abundant of many species some of the
 fish with very brilliant coloration. Dolphins
 were abundant.

The beach is covered with large rocks.
 That makes landing slightly difficult unless
 the rock is slight. Several species of gulls
 are evident but these are quite striking large
 colonies are clustered on many of the rocks
 and crabs are numerous. In the pools
 & crevices there are anemones mostly solitary
 but in places the segregated Epizoanth
 colonies may cover a rock 20 or 30 or
 feet of rock. Siphon coral heads near of
 about low tide shells may outcrop & the former
 A tuna fishing boat anchored near by.

Jan 3. A.T. 66° at 4 a.m. + 68° at 12 p.m. Not taken
the interval W.T. $76-77^{\circ}$ Clear most of
the day. smooth sea. The dredging 16-18 f in
bottom with mullpore and some little
variety altho of course the material was
interesting because it was different there
were three species of hydroids, one fenestrated
rugose hyzoon colonies, a starfish, a large
echinoid, a small starfish, a few gastropods.

Jan 4. A.T. 68 to 82° at 4 p.m. W.T. $78-74^{\circ}$
Clear in a.m. Cloudy in afternoon. Heavy swell.
Left anchorage at 3:16 p.m. for Clavin Id.

Jan 5. A.T. $68-82$ to 73° W.T. $74-76^{\circ}$. Arrived
at Clavin Id. (westernmost of R. group)
at 7:40 a.m. dist. 220 miles. Total dist
1213 miles. Clavin Id. Lat. $18^{\circ}10'N$. $114^{\circ}36'W$.
5 miles long 1-2 miles wide in high of about
to the west north + east. + slopes to the S. There
volcanic peak. 1100, 933 + 959 feet high.
Appearance + fauna somewhat irregular to
type of Snover. A lagoon near the south
shore was dry at this time.

The dredging gave much the same type of
material. Overcast or at least partly
cloudy all day. Left anchorage at 3:37 p.m.
for Clipperton Id.

Jan 6. A.T. 75° to 86° apt noon to 75° W.T. $76-81^{\circ}$
Overcast all day. Drizzle, shifting strong
travelling all day.

Sac Dyer cross ahead high
& leaves.

Got a hybrid for the single
Manned
Sac being of water about

heftine party. Barry got ducked &
got mad.

Jan. 7. A.T. 77° to 91° at 4 p.m. to 78° W.T. $81-82^{\circ}$
stopped at Clipperton I ($10^{\circ}17'N$, $109^{\circ}13'W$) from
1.05-2.38 p.m. the ship lying to. Clipperton
is about a couple of miles across with a
prominent rock 62 feet high on its southwest
edge. A few *Scaevola* & some other vegeta-
tion on the island. No record of getting on
the island. The surf was very heavy, so
landing was attempted. The dory for the whale
boat was not very successful as the water
was so deep until near shore & there the
bottom was rocky. Cloudy with rain
squalls during the day. Set W for the
Galapagos Ids.

Jan. 8. Travelling all day. A.T. $77^{\circ}-89^{\circ}$ at 4 p.m.
to 78° W.T. $80-81^{\circ}$ Clear in morning but
partly cloudy later in the day. Rain squalls
late in the afternoon.

Jan. 9. Travelling all day. A.T. 77° to 95° at 4 p.m.
to 75° W.T. $81-82^{\circ}$ Fairly bright all
day but cloudy with rain squalls toward
evening. Heavy swell beginning the middle of
the afternoon.

Jan. 10. A.T. 76° to 84° to 75° W.T. $78-81^{\circ}$ Overcast
the most of the day with rain. Heavy swell
continued. Travelling all day.

Jan. 11. A.T. $76-79-73^{\circ}$ W.T. $79-80^{\circ}$
Cloudy with rain in the morning clearing
somewhat in the afternoon. Swell decreased.
Passed Clipperton I ($10^{\circ}39'N$, $92^{\circ}W$), the first

front of the Gulafager. Id. - about 10 mi. to
 front of 11a. Id. It is somewhat regular
 in shape 550 ft. high about 2 mi. long
 Say to the north east of Wemman Id.
 1° 22' 1/2" N. 71° 49' W. where there is a smaller Id. off shore. 12.13 p.m.
 There is a really a group of three is. that
 appear. as one. precipitation - 830 feet high.
 The party has been ashore reported & other
 conditions for being high but next day
 is very much lighter so drive coll. sh. gold.
 The dredging from the shore to the sea was somewhat
 difficult for account of the reef & the curved
 and the duffy sea, there is but some
 very good material was obtained in from
 120 to 150 f. Bottom coral, mullipier, Carlsberg
 upon later. But the dredging material both
 in the dredged & in the shore material obtained.
 Sept. Wemman. In Albemarle (Isabella) at 10.20 p.m.
 Jan. 12. G. T. 72 (water taken in middle of day) W. T. 76°.
 Clear in morning. Partly cloudy in afternoon.
 Air-bred with east of the north of Albemarle
 made island at 7.15 a.m.
 110 miles from Wemman. T. distance 3070 mi.
 Rather heavy & duffy sea.
 Albemarle island is the largest id. of the
 group & is somewhat the most interesting. It
 is shaped somewhat like a golf with the
 front somewhat broader than the legs. While
 the greatest length from north to south is
 about 75 miles. The legs measured from

the top of the heel N.W. + S.E. is 65 miles. & the
 foot. from the heel to the toe N.E. to W.S. is 45 mi.
 The greatest width of the leg is 18 mi & of the
 foot 22 mi.

Perhaps in no other area in the world equals
 Albemarle as a demonstration of volcanism.
 The other islands in the group give good demon-
 strations but in this respect Albemarle
 is supreme. It consists in the main of
 five large volcanoes, three in the leg
 4000, 4000, 3700 feet - & two in the foot
 4225, 5000 feet. The connection bet. the
 leg & the foot - very picturesque is of low
 altitude, but the other connections are
 much less so. Two of these volcanoes were
 slightly active. The younger one had a slight
 steam vent on its northern face & the
 second from the north with several vents
 on its northern face. On all of the slopes
 of these large volcanoes there are numerous
 cones & craters of all sizes. So numerous
 are these cones that on the south western
 slope of the northern ~~mountain~~ ^{volcano} extending
 down to Christ the King Point the appearance
 is fantastic in the extreme. It would be
 impossible to count them except from the
 air for many of the craters have secondary
 or even tertiary cones within them. On all
 the slopes steep lava flows. Many of
 them reaching the sea are distinctly broken.

All near Cape Berkeley


In many cases, the lava was evidently very fluid, & (perhaps) less w. There are few if any ash or cinder cones. Albemarle id. is low & the slope to the mountains is gradual. But the western portion of the north-west coast is in the main the half of a huge crater, with the rearward half missing; & the western portion of it there is a fair sized secondary cone the rim of which is low enough on the rearward side to show a tertiary cone within the crater. Near the western rim of the large crater there is a small cone that has been split so exactly in the middle that on the rearward half has been removed, the flow hole is evident throughout its whole length & the layers of lava show the stratification of their formation.

The day was altogether in the morning the sea was too choppy.

A sandy beach near the point made landing somewhat less tedious. The tide was not low enough to get a good idea of the true form. The dunes & gully heights of the craters were conspicuous. There were spring lobsters & some of the porpoises, & seals were heard but not very plentiful. The main ignorance was evident in the sea.

Before we arrived

There were 2 or 3 small mangrove lagoons near shore and these contained small mollusks & crustacea. There was much variety in birds: - pelicans, laragulls, night herons, great blue herons, frigates, immatures, pelicans shearwaters &c. There as elsewhere for the alga are not very abundant or very varied. There were turkeys fishing bones nearly when the ~~Valer~~ was anchored at Albermarle Pt.

Jan. 13 A.T. 71°-77° at 12 pm. to 67° water temp. 72°-74° although these two locations are near the equator (Albermarle Pt. less than 10 miles north) it was decidedly cool when a breeze was blowing. Day bright all day. Left anchorage at 8.25 am to pass around the south end of Albermarle (Rodrigo Rock visible 12 miles from shore ) and along the west coast to Jagers Cove where there is a well sheltered anchorage in rope water. Anchored at 12.21 pm. Total dist. 31.24 miles. At 11.15 a launch party left the ship to explore the shore from Banks Bay to Jagers Cove. Succeeded in the afternoon with greater success than at any time previously not only for hydrozoa but for the other groups in demand. Amphioxus Haemaphysalis for the first time. The marine iguana here becomes much larger than those seen at Albermarle Pt. Great masses of solitary coral of a

brilliant orange color is very characteristic on the walls above low tide.

Birds & fish are plentiful as usual. The appearance of the fish, showing by the large head & eyes is rather striking. Several other fish are common & they show up their reflexes of fin very well in the light until they are disturbed by the pilgrimage sharks. A shark was killed but it does not look so large when it is suspended out of water or when swimming in the water. A couple of small lakes and reported not far from shore.

Jan 14.

A.T. 68°-77° at noon to 67° W.T. 72°.

Clear & partly cloudy - sea smooth in general. but somewhat choppy in the channel when the breeze gets up in the afternoon.

A land party went over to Harbourside Id. in the afternoon - Harbourside is much the same in length & breadth 16 or 17 miles. It has but the one large volcano 4329' not far from the center. The slopes are rather rapid in the upper portion and very gradual in the portion next the shore, so that a large portion of the island is of low altitude. The secondary cones are most numerous on the easterly slope and the slope shows several lava flows some of which were quite recent. Capt. Hancock observed an eruption & lava flow in

The lagoon is nearly all rough even when it extends into the sea. There are numerous indentations on the north east shore almost entirely shut off from the lagoon. The water is too high to see much in the bottom of them are much overgrown with mangroves. The marine birds & the sea turtles seem to favor these lagoons to some extent. Marine iguanas many of large size are more abundant here than on any of the islands visited. Birds are plentiful. In the evening the "may flower" came into Jagger Cove & yet I failed to see any. As the sea was rough leaving for San Angeles she took mail for the Velero III.

Jan. 15 A.T. 65° to 83° at noon to 67° latitude 69° to 70°. Partly cloudy all day. Breeze in afternoon made an early morning visit to a reef north of Jagger Cove. This reef is not connected with the main land and is exposed for but a short time at low tide. The surf runs pretty strong and it is not the easiest spot for landing and getting off. The collecting was nothing. The collections are a few with which species occurred in abundance. The dredging during the day was again with little. The few specimens for priming well but the sea became too choppy in the

of the crew it could be carried on more rational
 factory. This our most strenuous day in
 the Galapagos.

Jan 16.

A.T. 72° to 77° at 12h. 67° W.T. 70° - 76°
 Clear most of the day sea smooth.

Left Anchorage at Jacuz Cove 5.25 a.m. to
 go on and then P.O. 8.10 to 10.43 a.m.

After hr. dwell might make a further
 landing to get some photographs of the fantastic
 craters & cones near shore. Then sailed
 for Black Beach anchorage on west coast of
 Charles Id. Anchored at 4.07 p.m. dist.

Jacuz Cove. to B. Beach 115 miles Still
 3234 miles. (Voseana, Santa Maria)

Charles Id. ($1^{\circ}20'S$, $90^{\circ}27'W$) is about
 10 miles long E-W and 7 miles broad N-S. There

are two large volcanoes towards the north
 coast, 1500 & 1780 both visible from the approach

to the Black B. anchorage. The slope to the
 north coast is quite gradual and there are

unfavourably few secondary cones. Black B.
 anch. on the west & P.O. Bay to the north

serves as safe anchorage in normal
 weather. Both of these were used in the

cruise. As we bay there is still evidence
 of a whaling station for P.O. Bay & the steep

is evidence of it although it has not
 been reworked in recent years. A light

house made of oil drums is a characteristic
 feature of the line and a Port Office with

of a bbl or a pot. nearly still in use but
 mail is not collected by the very regu-
 larly. There are several small inhabitants
 of the island at the present time. Mr.
 Rutter & Dore (which will be called by
 Rutter but "maning" does not occur in the
 dictionary used in these islands) live on the
 western slope. Their house being in plain
 view from the B.B. Anch. They have been
 there for 4 1/2 years, and by dint of much
 labor they have made a garden that
 might be considered as a poor imitation
 of a native tropical garden. Bananas
 papayas, a little sugarcane and some
 vegetable plants a neagre fern. The soil
 although is rich enough but lacks of a
 reasonable supply of water makes anything
 much better impossible. Their house is
 little more than a shelter and while they have
 numerous canoe affluences for carrying
 on a cultivation and for making use of the
 crops it must take them in quantity pretty
 much of time. They grow much coconuts
 when winter appears and that cannot be
 very often. There is an ever trail for
 Black Beach to this location.

On the other side of the island as the house.
 In the area Barnes Wagner (Madame
 Bozquer) lives with Philpott &
 Sorensen (Sorensen leaves to Germany with

to be named) the the hiltner & his wife
his 10 year old son and their year old
only boy. It is reported that these
places are some improvement in Ritten
the hiltner have a better water supply
and apparently have more regard for the
fitness of things in making them home.
As we may expect these people who
have left civilization because the
food is unimproved have much dis-
agreement among themselves.

Since these people with the possible
exception of the hiltner look very old &
withered for their age. it is not a very
good advertisement [for the place]
these people may be ^{more} ^{rather} ^{the} ^{near}
but it sanity is indicated by almost
unquestioned belief in such a wild place
existing when there are myriads of tropical
isles they need a little observation with
a much more abundant living, deliver
ing from such sanity.

The beaches are easy access and there
are several good collecting spots. A canoe
going down from the surface a few hun-
dred yards from the beach at P. O. Bay
reached down to the water & apparently
connect with the sea. There are remains
of little shellfish still present. but the

Brin kept us
40. which
Ritter has the diff.
+ handles the diff.
took off 3.1 given
by the Barnes

Black Bull fell over
the Barnes diff.

seems to be no gulapaga now at the
island. Considerable dredging has been done
in the neighborhood & algae appeared
in greater quantity & abundance than at other
place in the island. Antalgia edulis
larvae were quite plentiful. Mollusks were
somewhat numerous but not of great
variety. By hand collecting was fairly
but there were some fine alcyonarians
& corals. Sea turtles & sea lions were
present but not in much abundance
as for iguanas. The small birds
flycatcher finches, warblers &c were
plentiful in the brush here & elsewhere.

- Jan. 17. A.T. 72° E 79° at 4 p.m. E 75° W.T. 70-72°
Clear or partly cloudy - smooth
- Jan. 18. A.T. 72° E 84° at 4 p.m. E 74° W.T. 70-72°
Partly cloudy. Under smooth
- Jan. 19. A.T. 74. 12 p.m. 76 W.T. 70-72.
Clear or partly cloudy. Under smooth.
at anchor in either Black Bull anchorage
or P.O. Bay. Jan. 16-20.
- Jan. 20. Air temp. 70°-78° at 4 p.m. E 74° W.T. 72-74.
Cloudy per. Smooth water.
Left anchorage at 5.25 a.m. & anchored
in Acad. Bay of Chedabucto, Santa Cruz
Island. 7.57 a.m. Chedabucto is
29 miles directly north of Charles Id.
It is the second largest of the Gulapaga
somewhat rectangular, 23 miles in

E-W + 28 ft N-S. apart from a narrow
 northern projection. 5 miles long & extends
 in northernward towards South Seymour Id.
 It is but an elevation near the center
 2296 feet high. The muller are
 not very numerous. The slope at first
 is more rapid, flattening out on all sides
 towards the sea, with very little sandy
 beach anywhere. The larger portions of
 the island are and of the regular
 gulapugns type with extensive cactus
 patches but on the slope part of the
 slope although not reaching the summit
 there is much greener vegetation. It
 is in this belt that a certain amount
 of cultivation is carried. This is said
 to be kept moist by the clouds that hang
 over it much of the time but this peak
 as well as every other one in the gulapugns
 was clear when we were in the vicinity.
 This island where the gulapugns have
 been most abundant and are still
 although the numbers have been greatly
 reduced. No longer are seen as
 of yore, seen not by day.

There is good anchorage in Acad Bay &
 in the inner part of the harbor good
 shelter for small boats, a further ex-
 tension forms a lagoon but the bottom
 is very shallow at low tide, several

inhabitants
 beside of the island fire near the shore of the
 bay, among the m & m horn hilles
 & m & m. Roads. Here too there are remains
 of much machinery, little of it now in
 repair. As the time they had no good
 drinking water but they expected to have it
 when the winter rains came. A good
 many fish are caught & these appeared
 in various stages of drying. The
 support of green bananas & the [to gulls]
 marine iguanas ~~live~~ scarce
 but there were numerous small birds
 every where near shore. A young gull
 6 days old was of some interest, with
 its plover still far from being dried
 out. Considerable trading was carried
 on for galapagos & galapagos feet.

The shore collecting was not very good
 as there was no really low tide. Shelling
 at various locations near the entrance
 of the bay procured an abundance of
 of Balgus but comparatively little of
 animal form.

Jan. 21.

A.T. 73-78 at 4 & 740 W.T. 72-74.
 Cloud with showers - sea smooth.
 Left R. Acad. Bay at 6.38 a.m. Passed
 Barrington (Santa Fe. id. at 8 a.m.)
 0° 59' S, 90° 04' W. 900 feet high.
 Anchored at Stephens Bay Chatham Id.

1907 a.m. distance 44 miles. Sit 3329 ft.
 Chatham (San Cristobal Id. lies just
 north of 1° S. & extends from 89° 17' - 89° 38' W.
 It lies in a north easterly north westerly
 direction, 23 miles in greatest length &
 19 in greatest breadth (nearly rectangular).
 The highest peaks 2490 ft & 1927 feet
 are near the western end, but there are
 2 or 3 other volcanoes of no considerable
 height, making the island descent rather
 abruptly toward the sea. There is a
 large supply toward the summit of the hills
 of the vegetation is richer than on the
 other islands, more clouds with rain &
 only at intervals during the day were the
 summit visible on the shore of Cook Bay
 adjacent to Stephen Bay on the north coast
 of the island. There is a small settlement
 which several members of the Peled party
 visited. Here there is a wharf. A road
 leads up to Progress a town of no size
 near the summit where there is a consider-
 able area of cultivation. Various
 estimates from 200-700 are given of the
 population. ~~from 200-700 are given.~~
 of the The chief Equadorian official
 resided at Chatham Id. Here again
 exchange was made for turtles, skins etc.
 The challenge gave fair results. At the
 fair battle at the chance, but near the

was loaded with rocky boulders, with large
Gorgonids growing on them.

Jan. 22/34 Air temp. 74° - 86° at 4 pm. to 75° W.T. 78°
Cloudy & foggy in sea during the morning
later morning. Left Jefferson Bay anch.

6.12 am. arrived at South Seymour (Bay
on west side of id) 10.28. Dist. 62 mi. Total 3391.

The two Seymour Ids. South on north. an exten-
sive of the northern project of dredge-fishery
refracted further island & for each other
by narrow channels. They are low &
flat. Shallow tide up the north of S. Seymour
flap the rocks quite conspicuous &
difficult for landing are seen to the
westward. South Seymour id is the
line of long sand dunes, bearing
some resemblance to the main equine
land with difference mostly noticeable
their reddish brown color, the very wet
with the lava rock when they are lying in the
shade they were not readily disturbed &
close approach could readily be obtained
but when they were the nation, they could
show a fine burst of speed. On a previous
trip of the Belgica the several of these land
ignores that were apparently were found
abandoned on S. Seymour were later to north
Seymour & apparently they are doing well
in this new abode.

The entrance to the channels between

The slide promised good dredging but unfortunately the sea was too rough. Some were attempted well in the bay in shallow water & some good edwards & others were obtained.

Jan 23/34 A.T. 75 to 86° at 4 p.m. E 74° W.T. 74-76°
 Palt Jody but bright & blue sea north
 Sept 8. Departure 6.25 a.m. and arrived at 12 a.m.
 in Sibiria Bay between Jones Id & Barff
 Jones Id. Jones Id lies 10 miles
 north west of Id defutigable. It lies
 nearly east & west with the greatest
 length 20 miles & breadth 12 miles. It
 is therefore much the same size as Chatham
 Id. It has a high peak 2700 feet in
 the center of the id but the cones of con-
 siderable made is appears more rugged
 than is defutigable particularly on the
 northern slope. To the north east the slope
 is more gradual & there is a considerable
 area of low alluvial near the shore.
 The western slope in general is wooded
 & at this time was quite green. The
 eastern & northern slopes are much more
 arid. The basal rock is of rough lava
 of the old type but over this in places are
 what appear to be three distinct layers of
 lava flows, as far as the color is
 reddish brown, somewhat like the basal
 lava, but this is light green, & the third

is almost black. These give an appearance almost a distinctive as the typical volcanic features of Albemarle. There is no alluvium with the sand of the present time but at an old mine very worked near the shore of Jones Bay on the west side of the id. Ball's Island is a very picturesque little id. near the northeast point of Jones Id. separated from it by a narrow channel. The larger eastern portion reaches a height of 390 feet as a volcanic cone part of the base of which toward the water has disappeared, the numerous small cones or craters give it the appearance of a miniature of the farthermost point of Albemarle many of the small craters bordering the bottom & has fine volcanic ash in them. Looking as things they have been recently used as fire places. The western portion is lower but towers to Silver Bay side a single ^{red} portion is broken off clear for the summit of probably was 50 or 60 feet. The two portions are joined by a neck of land bordered by a sand beach on each side, the north beach backed by sand dunes. The most of the center of it is occupied by a mangrove lagoon. Marine iguanas had seen their appearance

John roughs up
+ enters are low?
chemical action?
was at night
4 flung in lagoon

up the beach in small numbers. Sarge
chain of reefs $\frac{1}{2}$ mile and 18-20 miles
long were seen in the bay the only place where
such large ones were seen. The dredge gave
a fair supply of good material.

Jan. 24.

A.M.T. 74-81 at 4 P.M. 75° W.T. 76-79°

Cloudy all day sea smooth.

Left anchorage at 6.05 a.m. Passed around
the north end of James Id. & anchored in
James Bay on the west side of the Id. at
8.15 a.m. Total dist. 34.39 miles. In
the shore the most interesting feature was
the flocks of flamingos around the lagoons
near shore. The dredge at the south end
of the channel bet. Albay Id. & James
gave much good material.

Jan. 25.

A.T. 75-82 at 12 m. 74° water bet 76-78°

Brought all day ~~with~~ late afternoon sea smooth.

Left anchorage at 6.20 a.m. & anchored in
Cartago Bay, Alberon Id. at 8.20 a.m.

Total dist. 34.60 miles. The dredge in the
morning included banks of fine
white rocks & in the afternoon due to shore.
When the bottom was smooth enough to dredge
the bottom was under mud. & the material
was scarce. Echinoderms were scarcely
well represented. White Rock itself is
somewhat interesting as it is not by itself
about 5 miles from the anchorage. It is
not of great height but is rounded

particularly to the northward on a reef
probably only partly covered on land side.
It would present considerable difficulty
in landing. There is no ground on the
rock north to make approach on the lee
side unpleasant. The birds were
mainly pelicans, mostly terns & shearwaters
at the shore. Some sea lions were
swimming about in the surf along a ledge
of rock. The shore at the head of the
bay is not long & a cove or cove
of the contiguous mangrove houses
extend for some distance.
During the morning a man was harpooned
and brought to the ship. a rather difficult
task taking about 4 1/2 hrs. to accomplish.
It was 14 feet across the wings 15 feet
thick. Several rumors were going
in the gulls & never found in the stomach
but not at all digested. It possibly
has not melted for food [It is
flesh from the bird's own flesh]. The spinal
column was particularly extensive consisting
of 42 vertebrae.

Jan. 26 A.T. 72° - 85° at 4 p.m. to 74° W.T. 76° - 78°.
Daisy high but partly cloudy; sea smooth.
Left anchorage at 6:10 a.m. for Charles Id.
Saw to for 8.51 - 12.30 to give line for
dredging in deeper water 65 fms. with

John's always
making a
time

particularly good results, the bar in
the Galapagos Islands. Inward fish
the only one seen among the schools jumped
out of the water twice. Negatives were taken.
Several sharks followed the ship but
none were noticed. The only time that this was
noticed. Although the sea was very
rough. Arrived in P.O.
Bay at 2:14 p.m. Remained in the night.
In boat of Charles St. and moved into
in P.O. Bay or Black Beach. Anchored
until Jan. 31.

The dredging & shore collecting were
made of the same type as in the previous
visit. Here attempts were made to
dredge for deeper water but the sand
given in the chart was so coarse & the
tidal currents were so variable that
these attempts met with little success.
The small amount of material that
was obtained indicated that it would
be worth while dredging these conditions
to find suitable times for getting more
comprehensive results.

Jan. 27. A.T. 72° E 28° at 12 m. S 72° W. T. 76-77°.
Most of day bright, but always some
clouds. Calm. sea smooth.

Jan. 28. A.T. 72° E 32° at 12 m. S 74° W. T. 76°.
Cloudy smooth.

Scholar's museum for Galapagos

Capt. hulls anchored in P.O. Bay. Brought
the Capt. there were two vessels. Shaffer &
Kerby, a new ship, covered the harbor
from values & a young land as work. The
Capt. Sperry Oct. 18, 1933 for a longer
cruise around the world.

Jan 29. A.T. 72°-88° at 12h. to 75° W.T. 76-77°
Rain in the forenoon. Brighter in the after-
noon. sea smooth.

Jan 30. Air T. 72-84° at 12h. to 74° W.T. 76°
Partly cloudy, smooth.
Yacht Stella Polaris anchored in P.O.
Bay. from 3 p.m. to 7.10 p.m. went away
to collect. The Galapagos morning pictures
were shown on board. The yacht is
450 feet, 6000 tons net. Capt. 80
passenger on an excursion around
the world. She left for Tokyo and
the Marquesas.

Jan 31. A.T. 72 to 74 at 8 a.m. to 74° W.T. 76-78°
Partly cloudy, smooth. Left Anchorage
at 3.37 a.m. to go to Gardner Bay. Is.
boarded Gardner Id. Anchored at
8.13 a.m. Total dist. 3612 miles.
boarded Gardner Id. (Eschscholtz the most south
east of the group. It is 1°25'S 89°41'W.
It is elliptical in shape. The long axis
runs east & west. 8 miles long. 3 miles
wide. It has no high volcanoes, the

has this
Block
Island.

Higher being 640 ft. The slope to Gardner
 Bay is gradual. Most of the shore is
 rocky but there is a long sandy beach
 facing Gardner Bay at the time of the
 visit the vegetation was greener than
 most of the other islands. Marine iguanas
 were noticed here and an albatross
 observed by the same party. No
 sharks or dolphins were observed.
 In Gardner Bay several Eumeces
 and Chalcid. I. were seen on the
 Gardner Bay shore at this time. They
 had goats & goats were especially
 got most of the time for fishing.
 Gardner Id. is a small id. north
 east of the northern point of Good Id.
 It is separated by a narrow channel
 with deep enough water for passage. It
 has a large rock island at the water
 entrance. The island itself is steep &
 rocky on its western side going up 5/60
 feet but the beach to the north east is low.
 The dunes in Gardner Bay gave very good
 results, the species being quite different
 in some cases from those of the other parts
 of the Galapagos. I have collected in Gardner
 Bay good.

Feb. 1.

Sun. Left 72° E 81° at 12m. 675° N. T. 77-80.
 Clear in morning, partly cloudy later. South
 sea. Left Gardner Bay at 6.08. 9.45 for

#1

Guayaquil stopped for #1 13
 in $1^{\circ}28'S$ $89^{\circ}11'W$. for water sample.

#2

T. 220 f. 9.95° 150 f. 12.9° 75 f. 14.35° 25 f.
 17.25° 1 f. 25° and for #2 5.18 to 6.10 p.m.
 in $1^{\circ}45'S$ $87^{\circ}46'W$. Depth. 270 f. 8.8°
 150 f. 12.8° 75 f. 13.9° 25 f. 15.35° 1 f. 24.6°

Feb. 2.

A.T. 75° to 82° at 12 m. to 76° W.T. 76° - 80° .
 Overcast in morning, clearing late in the day.
 Sea north. Stopped for water sample
 in $2^{\circ}09'S$ $86^{\circ}07'W$. Depth. 270 f. 8.9° 150 f.
 12.3° 75 f. 14.0° 25 f. 14.8° 1 f. 24.2°

#3

Then. 11.00 to 11.48 am. in $2^{\circ}22'S$, $84^{\circ}36'W$.
 Temp. 270 f. 8.73° 150 f. 12.25° 75 f. 13.8° 25 f. 14.85°
 1 f. 25.6°

#4

Feb. 3.

A.T. 77° to 83° at 12 m. W.T. 80° - 85° .
 Cloudy with rain in the evening. The mountain
 almost entirely hid by low clouds. Sea north.
 Santa Clara Light was visible in the morning
 at 9.05 it was $4\frac{1}{2}$ miles off. Started
 up the Guayas river with Puma island
 to port at 11.17. So off Puma village
 at 1.19 for pilot. Became aboard at 2.18.
 Arrived at Guayaquil at 5.10 p.m.
 $2^{\circ}12'S$ $79^{\circ}50'W$.

The shores of the river presented every
 different appearance from anything in the
 Galapagos. and the dense, tall, deep green
 vegetation was most pleasing. There is
 not much cultivation along the river, but what

there is generally irrigated. There is not much cultivation until near Guayaquil. Many over the trees with epiphytic plants appeared in quantity especially in the lower reaches of the river. The latter trees were scattered & many of them were of the hard heavy wood, mango.

Guayaquil is quite a typical tropical city of about 100,000 inhabitants with a few points of interest. The country here is flat but a couple of hills on the upper side of the town give some variety to the landscape. A long row of cocoanuts on the opposite side of the river gives a tropical appearance but the trees do not seem to thrive in Guayaquil. It was the rainy season. Just before the flowers in the parks were in bloom. The mountains were hid from view for much of the day but as we were just about sunset the clouds cleared away to the westward & gave quite a ^{good} view of three ranges of hills in succession. Chimbora is in sight in the distance but we were not favored with a view of it. In the city itself the three markets evoked the greatest interest on account of the variety in the people there as well as in the products set up for sale.

As some animals, monkeys, snakes & turtles in the main were purchased by the

Feb. 6.
contd

In the evening the Pelaw Assembly gave a musical concert followed by a display of the Galapagos trip in the Rocheforte College Hall. That was many times too small to hold the crowd that wished to attend. A sheer shorty episode during the evening made a little diversion for those who had to stay in the lobby. Much information about the city & the country was obtained from Mr. & Mrs. Young, Messrs. Reed (father & son) & Mr. Reed the British consul & several others.

Feb. 7

W.T. 73° to 84° at 12m. to 76° W.T. 80 to 86°
Cloudy but clearing somewhat in the late afternoon. Anchored at Guayaquil at 10.29 a.m.
The visibility was very good. The major portion of the Peruvian coast was readily visible to the mouth of the Guayas. A summary could not be made of the ~~distance~~ ^{much detail}.
Arrived Puyo to drop the pilot at 1.24 p.m. I continued south on track 3° 18' S. at about 4 p.m. off Santa Clara Sv. at 4.45 p.m. Stopped for water supply 6.36-7.15 p.m. 3° 12' S 80° 39' W. T. 35 ft. 14.5% 25 f. 14.8° 1 f. 26.2°
8.11-8.38 p.m. 3° 08' S 80° 49' W. T. 35 ft. 15.9° 25 fms. 15.63° 1 f. 25.9°

#6

#7

#8

9.40-10.33 p.m. 3° 03' S 81° 01' W. T. 270 ft. 9.15° 150 f. 13.3° 75 f. 13.8° 25 f. 15.5° 1 f. 25.9°

#9

11-33-12.00 mid night $2^{\circ}59'S$ $81^{\circ}12'W$. T. 27.0 f 9.5°
 15.0 f. 13.1° 75 f. 13.7° 25 f. 15.42° 1 f. 25.5°
 Squid plentiful when two sets of traps
 were obtained. Squid small are the
 largest [4 line see] probably 14 or 15
 in line.

Feb. 8

A.T. 78° to 84° at 12 m. E 74° W T. 80-84°
 Cloudy in morning clearing in afternoon
 clearing at night slight swell
 Arose to sea 2.00 - 3.01 a.m. Then pro-
 ceeded to Santa Elena Bay. anchored
 off La Libertad at 9.05 a.m. Still
 dist. 4452 miles. The village of Salinas
 lies between La Libertad & the Pt. (S.E.)
 of Patate River, the shipping port for the
 oil fields of Angora a short distance
 northward. The dredge in the bay to the
 northward of the anchorage during the
 forenoon, the whole day & early in
 the evening a trip to Angora formed a
 diversion. It is 10 miles from Patate River
 but a small oil engine pulled the
 single passenger car over a [crude] [oil]
 gauge road in smelting more than an
 hour & a half. The musical concert
 and the motion pictures were given in the club
 hall. As the return made the boat
 quite late in getting aboard.
 There are almost everywhere elsewhere the
 was contact with people there was as a
 more with mutual acquaintance.

The area around La Libertad and there is much of a desert but during the rainy season the mud roads become impassable for motor cars.

Feb. 9.

A.T. 74° to 81° at 12m. 76° W.T. 80° to 82° . Clear in the morning, partly cloudy the remainder of the day. Rain in the evening. Sea smooth.

Shedging a short distance north of the point (S. Elena) in rocky bottom, gave the best results of the trip. *Hydrobia ulaguanaria*, *outacea*, *echinodermata*, and others all were abundant.

Anchored at 1.51 p.m. Passed S. S. S. Id. 4.33. Anchored off Sa Plata Id. at 6.17 p.m. Total distance 4511 miles.

Sa Plata Id. $1^{\circ}16'S$ $81^{\circ}05'W$. is $3\frac{1}{2}$ miles long N.W.-S.E. & $1\frac{1}{4}$ miles wide at widest. It reaches a height of 615 feet & is green. The shores are precipitous although there is a ~~comparative~~ ^{slight} ~~gentle~~ ^{gradual} grade in a ravine that passes down to a beach on the eastern shore. There is no population. Much of it is arid but there is much vegetation & a very great number of goats. There are some cattle as well. The island is 14 miles from the mainland.

Feb. 10.

A.T. 76° - 81° at 12m. 74° W.T. 81° to 83° .

Rain in morning overcast all day. Sea smooth. Shedged in the morning with but moderate success. This part begins

of the muddy coast. Anchored at 2.03 p.m.
 to go over to Cape Suez & take a line
 of bottom samples, but the samples
 did not work very satisfactorily as the
 mud was evidently too soft to dig in.
 Cr. $1^{\circ}02'30''S$. $80^{\circ}56'30''W$ in 21 fms. 15.55°
 at 18 f. 27.8° at 1 f. 15.48° at 30 f.
 at $1^{\circ}02'30''S$. $80^{\circ}58'5''W$ in 35 fms. 27.5° at 1 f.

Tried also at $1^{\circ}02'10''S$. $80^{\circ}57'50''W$ in
 75 f. and at $1^{\circ}02'00''S$. $80^{\circ}59'20''W$ in
 105 f. without success. Moved on to
 Santa Bay & anchored at 6.23 p.m.
 The town of Santa was readily observed
 for the anchorage. It appeared to be a pleasant
 place with favorable situation. At the
 port for horse carts the village of
 Santa Bay which are made the best
 of Panama route. The mountain itself
 shows up clearly (1420 feet).

Oct. 11. A.T. 77° to 84° at 12 m. to 75° W.T. $82-98^{\circ}$
 Rain in the morning, we cast a cloudy day.
 Sea smooth with a little swell in the morning.
 Anchored at 12.10 a.m. At anchor
 San Francisco Bay 7.48 a.m. ($0^{\circ}40'N$, $80^{\circ}07'W$)
 Cape San Francisco is the southern
 extreme bluff & the most notable
 of the western project points in Ecuador.
 San Francisco Bay lies to the south
 of the cape and a narrow shallow

portion runs farther inland. At the head of it is an extensive beach with a village behind it. Behind a small river that comes down here is pretty well shut off from the bay at low tide by a sand bar. The village is a typical tropical village but is cleaner & neater than most. Several of the inhabitants look much like Polynesians. I have found the style of fiddle and association with the north Pacific.

On the forest there is now indication of the approach of the tropical rain forest. That one more pronouncedly is further north in Columbia.

Most of the bay had muddy bottom or was practically the only good dredging could be obtained over the reef near the rocky point in shallow water [north of bay point]. This was difficult but much good material was obtained. Set anchor at 4.51 p.m. Took a series of bottom samples.

#12 At anchor. 4.29-4.39 p.m. L 51.
at 45 = 18.4° at 15 = 27.4°

#13 5.02-5.21. new anchorage L 30 f.
30 f. 14.6 15. 26.98°

#14 5.36-5.57 0° 38' 50" N. 80° 13' 30" W 450 f.
at 48 f = 14.38° 15 27.26°

#15 6.10-6.33 0° 39' 20" N. 80° 15' 30" W 60 f.
58 f = 14.30 25 f. = 14.46 15 = 26.2°

[In order to make next stop at perfect time
had not time for any more samples.
Turned northward leaving Ecuador behind

Oct. 12, Air T. 75-89 at dawn. to 78° W.T. 80-82°
Overcast all day. Sea smooth.
Passed around the west & north sides of
Gorgona Id. (Columbia) and here to the
west side at 8.58 am. (Hatteras Bay)
Gorgona Id. 2° 58' N. 78° 12' W. is 24 miles
from the main land, the channel being
all approximately shallow. It is 5 miles
long from N to S with greatest width of 1 1/2
miles. It is 3 peaks the center one the
highest being 1,296 feet. It is well within
the tropical rain forest area and is
said to resemble Crook Id. There
is plenty of rainfall and a waterfall
was seen for the first time on the trip.
There are some inhabitants on the
east & south of the id. Coconuts
being the chief product.

Gorgonilla, a small island about a
quarter of a mile from the northern tip of
Gorgona is a picturesque little id. with
palm trees & some coconuts in a palm laden
beach near the north west point. La Roca
a sail like rock about 1 1/2 miles south
of Gorgonilla is a conspicuous land
mark. The day was satisfactory only

when it was done over the reef close in & then there was much danger of being hung up. One made but a short distance from the rocky pt. at the N.E. of the id. in 150 ft. brought up so much sticky mud [and I should add + sandy gravel] and stones that it took a long time to get rid of it. Had to lean down & scoop it out of net with hand myself lying down & dredging flat from full length while net was hoisted just to its edge, very which we could not lift it by hand or with ropes however hard we tried. In the shallow water to the south west of the island there was much coral. Started up again at 4.10 p.m. going around to the south west of the island to pick up the whale boat that had been dredging. 4.30 p.m. Say to until 8.05 p.m. Sailed for Cape Comore.

Feb. 13.

A.T. 76-86° at 12m. C 74° W.T. 81 C 74°. Overcast cloudy all day. Rain squalls in the evening. Sea smooth.

2.46 a.m. Starboard engine stopped cracks in chamber. Repaired during day [?]

9.10 a.m. anchored in Calita Bay near Cape Comore 5° 28' N. 77° 29' W.

Cape Comore occupies a similar position relative to a rocky bluff as Cape

Cape San Francisco does not Calita Bay is placed relative to the Cape as San Francisco Bay is. It is even muddier than S.F. Bay & the muddy bottom goes away out to sea. In consequence it is the poorest marine collecting area encountered on the trip [by dredging]. It is the center of the tropical rain forest area & hence the jungle here reaches the maximum of antequity. It is rich in ferns orchids lianas of various kinds, large trees (mahogany & gilded alders, spiny & bushy shrubs, vines creepers etc.

Feb. 14. Air temp 73-86 at 3 p.m. to 79° W.T. 78-80 Overcast & cloudy nearly all day Rain squalls Sea smooth.

Anchored at 5:35 a.m.

Started to take water samples

#16 535-542 5°28'15"N. 76°30'W. in 17 fms.
T. 16 f. = 15.47° 1 f. 24.1°

#17 601-636 5°27'30"N. 76°32'30"W. 430 f.
T. 36 f. 14.85° 1 f. 24.68°

#18 646-657 5°27'40"N. 77°34'10"W. 575 f.
T. at 55 f. 14.6° 25 f. 15.16° 1 f. 24.4°

#19 705-732 5°29'N. 77°36'W. in 118 f.
T. 115 f. 13.3° 75 f. 13.6° 25 f. 15.1° 1 f. 24.25°

7:37. Left for Pat Utia, anchored at 10:12 a.m. Pat Utia 6°00'N. 77°20'W.

Feb. 14

Port Uthia, Columbia. $6^{\circ}00'N$ $77^{\circ}20'W$.
 Anchored at 10.12 a.m. The most easterly
 part of the cruise is shaped like a miniature
 fjord extending inland in a northerly direct
 five miles with an entrance about 1 mile
 wide. It provides a perfect anchorage
 well protected in all weather. The outlook
 is very picturesque as the point of land
 separating the bay from the open sea ends
 in a couple of islands with narrow
 passes between. The shores white quartz
 steeps are not so abrupt as in some other
 localities visited e.g. Gorgona Id. The
 hills run in to each other somewhat but
 none of them very high. The vegetation is
 almost as dense as at Cape Corrientes
 though here affords the narrow passes as
 the outside gave very good results. The bay
 itself and the extension of it into the
 open sea had muddy bottoms. Shore collecting
 was fair and a mass of coral heads in
 shallow water added to the variety of
 specimens. Here as elsewhere along
 the Columbian coast few algae were
 in evidence. Sea snakes - yellow &
 black - that appear all along the coast
 were especially abundant here. There
 seems to be but one species. Two different
 types of colonial sponges were much in
 evidence. Pelicans but have been in

most birds
seen here
500 or
more in
the air
until 6 p.m.
B.

evidence everywhere here appeared in large
flocks flying northward at intervals all
day [I should recall late afternoon] One
flock had 136 and another 129 birds. There
were several habitations around the shore
of the bay. It was stated that there are
no mosquitoes here and hence no malaria.
The people looked healthy and even the
little pigs were in good condition.

Oct. 15 A.T. 73° to 90° at 12 m. to 75° W.T. $79-77^{\circ}$
Clear & bright in the morning. Overcast in
the afternoon with rain during the night. ^{Sea} smooth.
Anchored for Balboa at 4.49 p.m.

Oct. 16 A.T. $67-80^{\circ}$ at 6 p.m. to 73° W.T. $74-68^{\circ}$
Fine and clear nearly all day. Partly
cloudy in the afternoon. Sea a little choppy
in the morning. Smooth later. Passed
the Perlas Ids. to the eastward early in
the morning. Taloga and Talagquilla
to Port about 9.30. Took on pilot at
9.58. Moved at oil dock at Balboa
10.40 a.m. Total distance 5274 miles.

Balboa $8^{\circ}53' N. 79^{\circ}33' W.$ is a small
town pleasantly situated at the Pacific
entrance to the Panama canal. The
inhabitants are principally government
employees and their families and it is
for them that nearly all the business is done.

Some
near
the
bay
number
7438

Most of these government families live at
Angos a short distance inland. Balboa
in the canal zone is practically continuous
with the city of Panama. quite a pre-
tentious tropical city where most of
the business is done by the Panamanians
although several other nationalities are
represented by consulates, banks, trans-
port companies etc. It is well located
on the sea shore and is as clean as
is usual with tropical cities, much
more so than it was formerly. A little
further southward is Antigua (old
Panama) or rather the ruins of it as
the town was destroyed by fire.
A train trip to Frijoles and a laboratory
from Frijoles to Barro Colorado and
thence out to the Canal zone laboratory
and natural history reserve. Barro
Colorado was formed as an island
when the building of the Gatun dam
made Gatun Lake. It is somewhat
irregular in outline and has an area
of 25 square miles. Its vegetation is
somewhat of the tropical jungle type but
it is not very dense & may easily be
penetrated in almost every part.
The laboratory is pleasantly situated
on a terrace overlooking the lake
(198 steps from the landing at the station).

affording a good location for work but is practically devoid of equipment. It would appear that the superabundance of little brown ticks and less numerous red bugs would detract from the comfort of a room at the laboratory. The James Zuleta who is in charge of the laboratory resides at Balboa.

A really good idea of the canal, the canal zone & the neighboring country is obtained by an air trip (Catharine Airways) from Balboa to Colon. The distance is less than 45 miles & is covered in 30 minutes (25 minutes from water to water). The flight is made at quite a low altitude so it is possible to see all the details of the canal. The locks cut, Gatun dam, Gatun Lake, the boats going through, the habitation scattered in villages, the roads & trails - the railway and finally one third of the way to the Pacific Ocean & the Caribbean Sea was visible. The Balboa entrance as seen from the air is much the more striking with the Gulf of Panama dotted with islands narrowing gradually to form the approach. The coast line on the Colon side is decidedly convex and the harbor fenced by a heptagonal with an opening towards the center for the

photo passage. Nothing else is in view but the wide open Caribbean Sea.

Colum itself is a nice clean port town with several fine buildings on the Christ the King side. Cristobal is the actual port. The mountains & the Dome are in port on the day. Colum was visited on a survey of the difference of culture on the two sides of the isthmus. Balboa has an extensive change of tide of about 25 ft. while Colum has but 2 or 3 feet.

Feb. 17. A.T. 72° to 89° at 122. 579. W.T. 68°-66°
Clear all day with but few clouds. The museum of the Velez exhibits the native pictures very given at the Club house in Balboa in the afternoon.

Feb. 18. A.T. 68-97° at 10 a.m. 569° W.T. 67° to 68°
Clear most of the day but partly cloudy at times.

Feb. 19. A.T. 69-90° at 4 p.m. 571° W.T. 66 to 72°
Clear in morning, hazy and partly cloudy in afternoon, sea smooth.

10.47 a.m. Left Balboa 11.18^{am} dropped pilot. Arr. to 4.15 to 5.54 p.m. 813 p.m. passed Cape Mola.

Feb. 20. A.T. 78-99° at 124. 573° W.T. 81-82°
Clear practically all day, slight swell.
7 a.m. Anchored to the eastward of Jicarón Id. just north of the passage.
Set. Jicarón Jicarón Ids. (7° 13' N, 81° 47' W).
T.D. 5492 miles Jicarón Ids. marker

the shape of an angled triangle
 $3\frac{3}{4}$ miles long from north to south & nearly
 this width at the north end, tapering to a point
 at the south end. These conditions are
 already noticeable here. as the vegetation
 which is not so green does not so
 completely cover the island. The higher
 point is 830 feet.

Jicagita id. is much smaller, $1\frac{1}{4}$
 miles long and less than half that in
 width, with a prominence 250 feet high
 at each end. The north end next
 to the passage (which is narrowed
 considerably by ~~reefs~~) has a sandy
 beach and is very precipitous shore
 by the south end is largely bare
 rock, arising almost perpendicular
 showing light grey color. There are
 some large caves & other notes.
 There are groves of palm trees in
 several places along the shore.

Shore collecting was rather disappointing
 the dredging was not very good at the
 eastern entrance of the passage
 but was very satisfactory at the western
 entrance. A south east wind
 made the sea choppy. Anchored at
 3.06 p.m. Anchored in Bahia Honda at
 6.23 p.m. U.S. Government survey boat
 in Bay.

Nov. 21, A.T. $72^{\circ}-89^{\circ}$ at 12° E 79° W. T. $80^{\circ}-82^{\circ}$

Buys all day sea north.

Bahia Honda $7^{\circ}44'N$. $81^{\circ}32'W$ is a rather small well sheltered bay with an island resting at one end of it. Vegetation is much the same as on Jicarón Id.

There are several habitations on the shore in some cases grouped into villages. The largest village is on the inside of the island. As usual the principal product is coconuts.

Good dredging was obtained fair results. Between he didn't have a lot of good material near the rocky point of the entrance. Coral patches were discovered in the lagoon the north shore of he didn't id. Some collecting did not provide much material.

A 15 foot mantle was hauled up in the bay as he didn't have a lot of material after much prolonged effort.

Nov. 22 A.T. $72^{\circ}-89^{\circ}$ at 12° E 79° W. T. $81^{\circ}-84^{\circ}$

Buys but partly cloudy all day sea north 12.47° at 12° E. 3.44° at 12° E. east of Secas Id.

Secas Id. $8^{\circ}N$. $82^{\circ}18'W$. include several is. none of them large arranged in a crescent with the concavity to the

eastward. Sea area well supplied
 with green vegetation in the Bahia Honda area
 but we could not see any ferns or ^{other} plants.
 The shores are rocky but very
 precipitous. Near the mouth half of
 the northernmost is a coral patch was
 discovered. The land region we
 found was of the islands. There have
 been long trails. The large lizard measured
 5 ft 3 in. A tree iguana taken in
 at Panama laid several eggs in
 subsoil.
 Dredging close to the rocky shores gave
 good results but the mud was so fine
 partly from shore.

- Det. 23. A.T. 80°-73° at 6 a.m. to 96° (to sun) at 8 a.m.
 Clear all day sea north.
 Anchored at 10.41 a.m. Passed the
 Sadrone Ids. at 12.52 p.m. Passed
 Cape Bunica (Bandy bet Panama &
 Costa Rica) at 3.02 p.m.
 Feb. 24 A.T. 78°-72° at 11 a.m. to 74° W.T.
 Smooth in the evening at sea. Chopped with
 an off shore wind at Culcha all after-
 noon. Smooth again in the evening.
 8.54 a.m. Off Cape Vela. Anchored
 Port Culcha 10.50^{a.m.} Distance Seear
 Ids to Culcha 325 miles T.O. 5891 mi.
 Port Culcha. 10°36'N. 85°41'W. is a

extension is a northwesterly direction from the northern portion of the Gulf of Amchur, Costa Rica. It is a rapid and narrow perhaps of any size but it is subject to a strong north coast of strong winds that at certain times of day makes the surface very choppy and unpleasant for small boats. North of the entrance are the North Viadore does I see really a couple of rocks, the outer of which stands up like a finger both is quite conspicuous. South of the entrance are the South Viadore consisting of three rocky islands with very little vegetation & some reefs. These separate Amchur from Cross Bay into the shore of which is quite a settlement with shops & customs offices.

Like the dried appearance, similar to that of the Galapagos, has become definite with little green vegetation and cactus are now holding sway. There are several sandy beaches with broken shells & coral rubble, etc. strewn over them. Where it is rocky the rocks go steeply into the water. The bottom is in sandy bottom over the whole bay although the sand may be mixed with mud & covered with shells & dead shells. Some coral heads were located near Cape Mala (north of the entrance).

Cape Buena, north of the entrance) the debris
 brought up material rich in corals &
 mollusks & echinoderms but from which
 little was seen to be plentiful. Some
 of the bivalves at the head of the bay seemed
 to be more agriculturally interesting than
 any other natives seen so far to trip.

Oct. 25. A.T. 74 to 102° at 11 am. (to 75°
 Clear all day except in the forenoon &
 to day.

Oct. 26. A.T. 71-81° at 4 pm. to 78-80° at 12 pm.
 Clear all day & practically no breeze on
 the land. Sea smooth in the morning.
 Considerable swell in the afternoon.
 After passing Cape Elena the off shore
 wind (pupango) made the sea in the
 Gulf of Pichuanga quite choppy
 but this soon went down.
 At 5.54 a.m. Passed Cape
 Elena 5 miles off at 7.53. Just before
 passing the cape passed through a large
 school of porpoises extending far out
 on each side of the ship. They were
 smaller than any other (seen yet) also
 five feet long. Several boats were
 visible in Pichuanga. Mountains
 on the shore of Lake Pichuanga were
 visible. On Lake Managua at Vieja
 the highest of these a little farther north
 west. Near Vieja there were smaller

Peaks (volcanoes) active. Chas 8 p.m.
the ship is off to the Gulf of Fonseca
in which border Nicaragua, Honduras
& San Salvador.

Oct. 27. A.T. 80° to 85° at 10 a.m. to 78° in the
clear but partly cloudy at times. Con-
tinued along the coast of San Salvador until
about 8.30 the boundary between the state
and Guatemala was passed.

The high peaks of Pico Negro & the high
peaks of Aguan (each over 12,000 feet,
the highest in Central America north
of the Pacific) showed up very well
in the early forenoon but later became
entirely obscured by the smoke from
active volcanoes in the neighborhood.
and by clouds. On account of these
clouds during the remainder of the day
none of the mountains in background
was visible but only the mountainous
level shore line & small areas back
of it. The course was near shore
at times in only 10 fms.

San Jose was passed at 11.30 a.m. &
Chimiperio at 4.38 p.m. The boundary
between Guatemala & Mexico was
about 7.30 p.m. and considerably
swell

Feb. 28. A.T. 79-73° at 8 a.m. to 84° at 12 p.m. to
81°. Partly cloudy all day, Chocoma sea

Feb 28 (Sat) The Gulf of Tehuantepec lived up to its reputation and was very dotty. In order to avoid the bad weather the course was set rather further shore & much of the voyage was thus wasted. It was still dotty.

Along the part of the coast the mountains came pretty close to the sea & add much to the interest of the landscape. It has much the appearance of desert country.

Salina Cruz the terminus of the Tehuantepec Railway was ahead at 10.03 am. It was pretty well in a state of decay. At 10.30 the dotty sea moderately somewhat by air was somewhat uneasy the rest of the day.

Tangula Tangula (Mexico) was reached in the early afternoon, anchored at 2.39 pm. Distance from Culiacan 715 miles. Total distance 6606 miles.

Tangula Tangula Bay $15^{\circ}46'N$ $96^{\circ}06'W$. With the other bays in succession Santa Cruz and Guatulepec are shallow indentations of the coast giving only moderate shelter for only a few miles across the mouth of the three of

Coast line has much the same appearance throughout the whole distance from the Mexican border to Isabel Island. Some shelter of sandy beaches are separated by small groups of large masses of rocks. Beyond the shore a series of rolling regular hills, getting higher into mountains further from the shore form the complete landscape. The hills are brown and arid and while at first sight they look rather picturesque they get very monotonous, perhaps more so than any coast line seen on the trip.

Mar. 2. A.T. 78° to 84° at 8 a.m. to 73°.

Cloudy in the morning. Clear later and partly cloudy in the afternoon. Sea light choppy in the late afternoon with gentle swell. Reached White Shores Island at 12.41 p.m. These islets consisting in the main of three masses of rocks rise abruptly from the sea more than a mile from the nearest shore with deep safe water between. They are most conspicuous, 200 feet high, because they are white with guano from the numerous boobies & terns that almost seem to cover the rocks. There are several tropic birds as well but they are not numerous like the others. From opposite the White Shores the Veler was headed out to sea for about

three miles in order to put over the whole
 box for dredging in deeper water. The
 gear worked as well here in water up to
 140 fathoms as elsewhere but the bottom
 was muddy & the material obtained was
 mainly fish, but an interesting holothu-
 rian was a useful record. In one
 of the hauls many shrimp all of the
 same species were obtained. On
 the mean time the vessel moved on to
 anchor in Petatlan Bay at 1.46 p.m.
 Distance from Tangola 354 miles
 Total distance 6900 miles after
 dredging in deep water the whole boat
 moved in to the White Shores & dredging
 was done quite close to the south side of
 the rocks with the result that very rich
 material was obtained. Hydroids were
 particularly abundant but other
 groups were also well represented.
 It was a very good locality for adino-
 zoa probably as good as any on the trip.
 Petatlan bay $17^{\circ} 29' N.$ $101^{\circ} 35' W.$ like
 all the bays on the Mexican main land
 coast supplies a good anchorage and
 is fair weather. It is wide open to the
 north ~~west~~ ^{west} protected only for the south-
 east as a rough bluff Morro de Petat-
 lan projects out for some distance
 in the direction of the White Shores.

At separate sandy beaches there
to the north east of the beach the
surf quite strongly the vegetation is
much of the same type as that around
Jagota Jagota.

Mar. 3. A.T. 71° E 70° at 4 a.m. to 81° at 4 p.m. to 75°

Clear all day until late in the evening.
Sighting in the west during the evening.

Sea smooth with slight swell.

The day all around from de Petatlan

near the beach to the eastward, between

the point & the White Islands & north of

White Islands produced much material

but not of as much interest as that

of the previous day. Shore collecting

was poor possibly because of the fact

that there is only about 2 feet change

even at spring tide.

Set anchor at 12.50 p.m.

Mar. 4. A.T. 71° E 70° at 4 a.m. to 81° at 4 p.m. to 78°

Clear all day. A little more swell. Windy

in the evening made it somewhat choppy

for a while. Morning & evening both cooler

enough to add a little clothing. Arrived

at Ahacatita Bay $71^{\circ}16'N$ $104^{\circ}50'W$.

Distance from Petatlan Bay 226 miles T.D. 7186

miles. Ten. Bay is even less protected

for the north west than Petatlan Bay.

Haridad Head projecting directly north.

with rocky islets extending out from it

gives good protection for the north east.
A small palm grove just inside Ima-
catita point and a much larger one north
of this a short distance gives a definite
change to the shore, a small village
is situated in the latter grove. A lagoon
opening into the bay is situated near
the shore north west of the grove.

The dredging in the bay is chiefly for 50 fms.
gave sandy bottom and shells but
unfortunately little interesting material
but a couple of boulders close to the shore
side of the rocky islets off Navidad
Head gave a great abundance of material
rich in hydroids and other colonial
life, any previous locality. Shore
collecting was not very profitable
for some time the range known as
Pelatta Bay. Anchored at 5.4 p.m.

March 5. A.T. 72° to 81° at 7 a.m. to 68° .
Clear most of the day. Partly cloudy in the
afternoon. Sea smooth in the morning
choppy in the afternoon due to a north
west wind. Quiet again in the evening.
Quite well. Passed Cape Comete
Jan 12. 27 a.m. Tides were off
to the southeast during the morning.
Anchored for a while at 7.44 a.m. Dist. from Ima-
catita 18.5 miles

native
 got about 88 Anguilla
 value for each shark
 Out out of Spaceman
 have for oil drum they
 then as help with
 at the old ruins
 drum

Total distance 7371 miles.
 Crabel Island. $21^{\circ}51'N$. $105^{\circ}53'W$. lies
 $17\frac{3}{4}$ miles from the nearest mainland at
 the entrance to the Gulf of California.
 The main island consists of three
 large half-crater cones. The half-tran-
 versed the crater in each case having dis-
 appeared. Two of the cones have a large
 appearance by the one facing south
 appears to be definitely sand stone. The
 highest point is 280 feet above sea
 level. Vegetation is sparse but is
 quite distinct on the north eastern
 slope where it covers the area quite
 fully. It evidently is a favored
 rookery and nesting place for many
 of frigate birds, terns and boobies.
 There are also some native birds.
 Smeeth's fishermen were living on the
 sandy beach facing the south east.
 Two small but rocky islets close
 to the north east point of the island
 are conspicuous and there are larger
 rocky islets off the north west
 point of the island. There is said to
 be no water on the island.
 The rocky points in the shallows
 were too rough for satisfactory dredging
 and a short distance off on all sides
 the bottom was sandy with mollusks

in some places, that gave some interesting material but not as extensive as we found on our previous trip. Shore collecting has not been effective. The scarcity of algae along the shore is very remarkable.

Anchored at 11.52 p.m.

Mar. 6.

South Bay to San Benito	25	T. 7984
San Benito to San Diego	284	8268
San Diego to L.A.	93	8361

Sept 8

Arrived San Diego 11.15

Sept " " 7.15 a.m.

Left S. A. Benthic 2.38 p.m.

Docked at 3 p.m.

3.05 p.m.

Feb 28. Jangala - Jangala arrived in
 mid afternoon & put over dredge boat
 while one party went swimming, a fine
 beach for that too. The dredging was better
 but not such an marked success as
 must part bet 15 + 20 fms. but sand
 was too coarse to wash out well &
 so rather troublesome. Lots of shells
 but mostly fragments, excellent haul
 of echinoderms, white indians like Cuthra
 a Bar indian esp of ophiurans more
 than we had gotten the whole season. Put
 together largely all one species but a
 few specimens of 2 or 3 other species but much
 smaller ones. Crustaceans in abundance
 & the ophiurans were the leucosids, large
 and small, numerous small ones, but
 only one large Persephona or Randallia
 one only or perhaps two little crabs, & lots
 of small Portunids, a few hermits. Blis
 or late in the day in arriving we had to retreat
 to ship about 5 fms. supper / Put in 20 fms
 struck sand but made the same out of life, all days
 combined.

May 1. Had 7³⁰ breakfast so we could get
 ashore at 8 to get in what time we could
 represent and so, about 9.45. Could well
 have used a much lower tide, by staying
 longer, but did not want to delay sailing
 for the white Shores. Got practically
 nothing in shore except shells + echinoderms
 + few crabs + started algaenarian till
 we struck coral which Taylor discovered
 while looking for algae. Said it was
 the best place he had "stuck in a boat".
 The algaenarian Taylor got mostly out
 of the tide pools here. Surf was pretty
 bad + we had to go around to the shore
 round side of the island before we could
 land. Saved about a dozen of the large
 limpets, (for what?) about 10 to 12.
 Watch tonight at about 11.30 saw a
 large flaming meteor drop into the sea.
 There are vessels such as this he thought
 at night a trace. Smith saw the
 earlier it being at 10.30. I had the light and
 it had been that light and played light
 drifting down. Beautiful day + another of the
 clear day, at peace with the world moonlight night.

March 2. Lined off White Trainers along ⁰²167
 lunch time; (in p.m. look at the large
 rounded granular covered rocks, brilliant white
 in the sun. These you are reminded how
 more appropriate the earlier names were.
 Half-a-day's change after some few more from
 a new lens. They do look as like a
 group of white unbleached fabrics on the road
 with of course a bit of imagination.

The ship set us down, in the harbor
 about three miles to the westward of the
 Trainers for a try in about 100 fathoms +
 two fathoms in 100-140 gave up shrimp ^{small} & the
 fish mostly the latter. The shrimp later
 were about half the total quantity now
 put up with the gulls in 80 fms, all
 the same kind. The latter was soft
 very much that washed out very readily.
 As it yielded no further variety we
 moved in close to rocks in 20 fms + found
 a rich alcyonarian zone literally alive
 with hydroids. Here had a number of
 good hybrid places, but this is the best
 yet. For leucoids the Tangier hauls were

103
169
better, I believe. Got also a few *Silthidia* like
here. The tide seems all wrong on the basis
of the tide table, being apparently like Jan. 1.
if its behavior. Well known better this a.m.
The bottom was so rich that the Tross, asked
if we might not have an extra half day
dredging, & the Capt. kindly acceded, leaving
at 2 p.m. on the third instead of the evening
of the second as planned, originally. We
shall probably have to stop a day off the third day stop
contemplated at Tenacatita, where we did
the low tide fairly well last year. My line
bottles are doing well the little fellow has
showed considerable growth it seems. He
now weighs.

Mar. 3. We dredged around about the
monro de Pelatan, and though the dredge
chugged like all get out had very little
material in it, but what was there was
very good, Portland Crabs mostly &
some penaeids each time; comparative
few shells but excellent crabs &
couple of starfish, not many in this but not bad.

Mar. 3, cont'd. Then we put in at head between (104)
 the mouth of the White River about half (171)
 way between good much the same kind of
 bottom shell sand, of which the sand seems
 to wash and leaving the few shell fragments
 behind, got a reddish brown fragments
 than along shore that was a speckled kind
 & then at the far end of the white river
 we got a coarse white shell sand
 that would not wash out. Had many
 small white yellowish fragments protecting
 colored, with dark brown & pinkish markings
 making them quite inconspicuous in the
 shadings & relief of the red-shell bottom. The
 shell fragments were mostly quite small &
 not over half an inch long shells & a broken
 full. Further along the N. side of the
 river we for coral got but only got
 a small long fragment. The coral and
 head a few small *Cydonia*, 2 large
Cydonia from the half way and head.
 We left Petatlan Bay where we were anchored
 (White River) at near 11 o'clock for 18 hrs. run to
 Tenacatita, Mex.

March 4: Tenacatita Bay, Mexico, a one day
stop of scarce 12 hrs got it at shortly after
six this morning and left again shortly before
six this same evening. But we had a
^{cooking} stimulating day, fine dredging
for ~~before lunch~~ ^{after breakfast} before lunch,
good ground and lots of Rhynchoids &
some Crustaceans. It made me just as
happy to get the things for the Thayer as
for myself, and we did get some good
Crustaceans, - half a dozen of those Peripatus
like cericornis from the east coast that
lives in a horned bygon house, I can't
recall what the western analog of it is
glad to see one of these of Benedict in his
Rathbun's Stalk-eyed list. Shrimps were
scarce, as hermit were plentiful, porcellanids
in fair number.

may let go for eight of those and of
miller and all (I loved them), besides I got
2 or three Sicyoptera and an Oenocera of about
4 inches long. In the five days of the trip
at least for the time, were getting north, getting towards

March 5, At Chabel Id. We arrived about
 6 a.m. and went dredging right after breakfast
 for an unusual routine. Most of the
 bottom about Chabel Id. was more or less com-
 position which quite naturally brought forth
 predominated with a sprinkling of tiny Gales.
 Only off the northern end did we strike a
 different sort of bottom, mollusks, but
 not much difference in species though
 different in relative abundance, few
 Portunids, some Gales, + where different
 lots of Hydroids as compared to
 few + several stomatopods where
 we had no success in the sandy drag.
 We made everything about Chabel Id. station
 except the time collecting, and made some
 seven or eight hauls with the dredge
 in accomplishing it. Just 2 bags of
 algae. Either Bayley, Chapin, the fair
 for getting them is really then, whether
 or else they are not just here, in that
 case the environmental conditions are worth investigation.

The mornings, and I suppose the greater part of the nights are definitely colder, shirts are being left off except around the middle of the day and for supper (dinner in the evening) shirts are making their appearance. Jim & three out of the bunch left them off this evening. The weather is all through the trip continues beautiful quite quiet, with beautiful moonlight for most of the evening than during the past week.

March 6 Sailing I sailed last night
at 12 midnight, we are now at 6.30
perhaps third of the way across the mouth
of the gulf of California headed in a
bee line for Cape St Lucas. It will
be an all day run and ~~about~~ ^{about} Longman
morning the 7th - well make ~~it~~ ^{Maydague Bay} ~~(about)~~
~~the~~ So, California for more collecting
a place I have not stopped at since
1911, twenty-three years ago! This time
I hope to get in dredging for Crustacea
rather than mollusks, as Bartholomew insisted then.

Mond. 7. we reached the latitude of Magellan ¹⁸²⁹
 along about day break after running most
 of the night in quite a fog with the whistle
 going. Not much sleep for the long haul
 with our navigation. The entrance to
 the bay opposite which we were along about
 6.30 & 7 o'clock was so obscured by fog that
 the Captain would not venture in so we
 went along about 5 or 6 miles to the
 wide open Santa Maria Bay just
 to the northward and as we got there
 the fog had lifted enough for the men
 to illuminate the headland Dyer's
 Point (a most rare Spanish name) which
 makes this bay on the north side.

After breakfast & dodging as usual
 the sea rose and with sparks at the
 helm. Also our no. 1. engineer to
 tend the hoisting engine. Close to
 the point we struck a rocky ledge in
 10 fms. and got some good things, both

(100)
181

Hydrids algal. The amphipods today were more numerous than any of the other crustaceans with isopods + Keratids, but a few Portunids, a couple of Decapods (we got one or more crustaceans each day) but not G. like the first day we missed them. The Hydrids are quite different, the large rays from there we met with down on the Mexican coast as well as the Galapagos, being more a 'Atlantic affinity' than Pacific, so it seemed. And was it a miserable cold chilly morning with a mist in the spray & wind? The fog was still all pretty much around us & the blue flannel shirt was scarcely enough after we got away from the ship. The last haul of the day, & the last station was the richest in point of number of specimens of the three (station) about a dozen hauls of the month. Both quite used & all grown in 35° 40' F. about a mile or a mile and a half south of Hough's Pt.

March 8. Left Santa Maria Bay at about 110
 5 a.m. Reached a little farther up the 183
 coast to ~~Shalve Bay~~ ~~Shalve Bay~~ ~~Shalve Bay~~
~~Shalve Bay~~ ~~Shalve Bay~~ ~~Shalve Bay~~ ~~Shalve Bay~~
 expected to dredge there later in afternoon.
 Our arrival had been planned for about
 4 p.m. but with bad wind & shoals of
 uncertain position it was necessary
 before we got berthed there & then it
 began to get dark / At 4 a.m. on the
9th of March we got underway for

Shalve Bay just to the south and
 eastward of Gentle Bay. It is at
 the former that the wonderful clams about
 about which I have heard so much are
 found. Dr. Thayer & I went dredging
 & about every body else went ashore for
 dinner. We reached Shalve Bay about
 noon, & went dredging right after lunch.
 Had good luck & got back to the ship at
 2.30. A *Randallia* & a *Platysma*, & a number
 of

small *Clythreus*, one slightly hermit
 no end of amphipods, of which several were
 of good size. Between 2.30 + 3 weuffed
 anchor + headed for South Bay, Cocos Id.
 getting there about 5.30. Very bare + des-
 olate looking. Had plenty of wind, but
 it put up contrary wind breaks so that
 we could work on the after deck. Here it
 is 10.30 p.m. + we've finished all the
 rating we are going to do tonight +
 these notes are good note till tomorrow
 at 6 a.m.

March 10 In South Bay, Cocos Id.
 Here we dredged along the edge of
 the shelf beds, taking sand and coral
 getting our one notable *Cucurid*
 about half an inch in diameter with
 red markings, + the rest of the time
 in more or less sandy bottom
 weedy, one shank of shelf of
 coral, + considerable number of her-

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